Observations on Air found in the Pleura, in a Case of Pneumatothorax; with Experiments on the Absorption of different kinds of Air introduced into the Pleura. By John Davy, *M.D. F.R.S.* Read June 6, 1823. [*Phil. Trans.* 1823, *p.* 496.]

In this paper Dr. Davy gives a detailed account of the symptoms produced by the above disease, and of the appearance after death, in a man of thirty years of age. He also adverts to the composition of the air found in the lungs, which was collected by immersing the body in water, and puncturing the pleura, when it issued in the enormous quantity of 225 cubic inches. It was without smell, and extinguished flame, and was not inflammable. It consisted of 8 carbonic acid, and 92 azotic gas per cent.; and the author considers it as derived from the atmosphere by a morbid communication, which was discovered on dissection, between the pleura and atmosphere through the medium of the lung. To determine the mode in which its change of composition had been effected, Dr. Davy inflated the right pleura of a dog with atmospheric air, and killed the animal after 48 hours. On examining the air, the oxygen was found absorbed in larger proportion than the azote, which accounts for the accumulation of the latter gas in the preceding instance. To ascertain how far carbonic acid is absorbed by the pleura, a mixture of 80 parts of common air, and 20 of carbonic acid, was injected into the right pleura of a dog. After two days the animal appeared well, and a mixture of 75 of air and 25 of carbonic acid was thrown into the left pleura. Twenty-four hours after, the dog was killed, and the result was, that during a sojourn of three days in the pleura the oxygen had been absorbed in greater proportion than the carbonic acid, and the latter in a greater degree than the azote. The power thus exhibited by the pleura of absorbing one kind of gas more than another, without reference to their solubility in water, induced the author to institute some similar experiments with hydrogen, nitrous oxide, and nitrous gas. A mixture of carbonic acid and hydrogen thus applied did not appear to affect the health of the animal. A mixture of azote and nitrous gas killed the animal in five hours. In the former case the hydrogen disappeared, and its place was supplied by a small quantity of azote. As the author's experiments induce him to believe that no air exists in the pleura in a healthy state, he is led to suppose that its appearance in this case is referrible to secretion.—In a note annexed to this paper, Dr. Davy expresses his doubt as to the existence of any free carbonic acid in the blood; since he could, in two experiments made for the purpose, obtain none by means of the air-pump.

On Bitumen in Stones. By the Right Hon. George Knox, *F.R.S.* Read June 12, 1823. [*Phil. Trans.* 1823, *p.* 517.]

In this paper Mr. Knox details a series of experiments upon a great variety of mineral products, tending to show in them the frequent existence of bitumen, or some analogous substance; and he